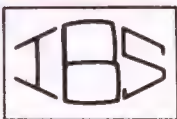


[6712-01]

FEDERAL COMMUNICATIONS
COMMISSION

[47 CFR Part 73]

[Docket No. 20735]

NONCOMMERCIAL
BROADCASTthe journal of
college radio

Vol. 16, No. 5

AGENCY: Federal
Commission.ACTION: Further
rulemaking.

SUMMARY: The Commission, in response to filings from the Corporation for Public Broadcasting, proposes to consider changes in the rules governing noncommercial educational FM assignment practices to change the classes of stations and establish a Table of Assignments.

DATES: Comments must be received on or before January 2, 1979, and reply comments on or before February 15, 1979.

ADDRESS: Federal Communications Commission, Washington, D.C. 20554.

FOR FURTHER INFORMATION CONTACT:

Jonathan David, Broadcast Bureau (202-632-7792).

SUPPLEMENTARY INFORMATION:

Adopted: June 7, 1978.

Released: June 19, 1978.

In the Matter of Changes in the Rules Relating to Noncommercial Educational FM Broadcast Stations.

1. The Commission has before it a Notice of Proposed Rule Making in this proceeding and the filing in response to it.

2. The proceeding was designed to explore a variety of legal and policy questions relating to more efficient use of the frequency space set aside for educational use. A number of these issues were resolved by the First Report and Order and Second Report and Order adopted simultaneously. One issue, the need for interference protection of television channels, was to be resolved in the First Report and Order we hope to issue. The remaining issues were not resolved as

The Second Report and Order we raised regarding the service to be provided by educational stations has been incorporated into the proceeding we commenced to explore the eligibility to become an educational station.

yet because additional information would be helpful for reaching the best solutions to difficult problems. Thus, this Notice is being issued in an effort to obtain this material and to aid commenting parties in focusing on the same issues.

Originally, we expressed our belief that it was unlikely that a nationwide system of Assignments could be developed for the FM Channels 201 and 220 which are set aside for educational use.² We had developed a Table for use in the area near the Mexican border, but none existed for the rest of the country. Our doubts were not so much based on engineering problems involved in developing a Table (although these problems could well be considerable). Rather, we had serious questions about our being able to decide where the need was for assignments. As we pointed out in developing the Table used for special FM assignments, we had to rely on the simple correlation between population and (and, for that matter, support) a commercial FM station in the area of educational FM. Nevertheless, we invited comment on for Public Broadcasting (as a petitioner) and to offer their suggestions.

4. CPB, in submitting a proposed National FM Assignment Table of its merits, we would make so basic a step as to rely on the benefit of substantial benefit directly focused on it.³ It has been possible yet since the Table was not part of its submission which led to the Notice. Not the Table itself a new offering, it incorporates a number of other changes made there for the first time, including changes in the classes of educational FM stations. The CPB Table utilizes three classes of stations with three subdivisions each, for a total of 9 types of stations. Although it is true that the Notice raised the issue of a Table and of changes in the classes of stations and/or changes in the facilities available to each class, this was done only in general terms. No specific proposal, as such, was offered beyond our observation that it

²In Alaska, these channels are not available for FM broadcasting and, as a result, separate channels as such have not been set aside for educational use. However, we have designated the individual channels assigned for educational purposes by use of an asterisk.

³In fact, our engineering study suggests that at least some changes will necessarily have to be made in the Table even if it were adopted.

might not be necessary for stations to be able to operate with a height above average terrain permitted for Class B stations. As we discovered, very few stations operate with the permitted average terrain height of 2,000 feet, respectively. The case it was by the fact that we needed to protect these facilities to insure a standard level. Also, it was a station's ability to increase its facilities through use of other requirements (a commercial stations), which the level of protection bears a relationship to the needs of the stations involved and the consequences for the establishment of other stations. The record and offers some assistance in this regard, but we feel that considerable benefit would result from inviting further comment on these allocation issues as well as on the CPB Table and its new classes of stations. Accordingly, comments are invited on the proposals set forth in the Appendix. The Appendix contains the CPB Table and an explanatory synopsis of its major features.

5. Authority for the actions proposed here is contained in Section 4(i), 303 and 307(b) of the Communications Act of 1934, as amended.

6. Pursuant to the applicable procedures set out in Sections 1.415 and 1.420 of the Commission's Rules and Regulations, interested parties may file comments on or before January 2, 1979, and reply comments on or before February 15, 1979. All submissions by parties to this proceeding or persons acting on behalf of such parties must be made in written comments, reply comments or other appropriate pleadings. Reply comments shall be served on the person(s) who filed comments to which the reply is directed. Such reply comments shall be accompanied by a certificate of service. Further members of the general public who wish to participate informally in the proceeding may submit one copy of their comments, specifying the dock number in the heading.

7. All filings made in this proceeding will be available for examination by interested parties during regular business hours in the Commission's Public Reference Room at its headquarters, 1919 M Street, NW., Washington, D.C.

FEDERAL COMMUNICATIONS
COMMISSION,
WILLIAM J. TRICARICO,

Secretary.

PROPOSED TABLE OF ASSIGNMENTS FOR NON-COMMERCIAL EDUCATIONAL FM

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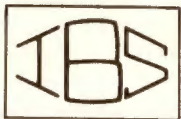
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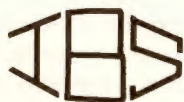


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JEFF TELLIS

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from the editor

For some years now. . . we have all become used to periodic and usually short-lived bombardments of jargon. . . fashionable words or phrases that seem to be used repeatedly, weaving their way into our speech and writing until one day they are for some reason considered worn out and no longer fashionable. Politicians, sports announcers, and news headline writers in particular seem to enjoy thrusting these new "buzz words" on us.

Nowadays. . . the broadcast industry, (long known for its own internal jargon incomprehensible to outsiders), has been taken with a couple of terms that seem to be popping-up everywhere. Among them are deregulation, re-regulation, marketplace forces, re-write, and revision.

All of these terms relate to proposed changes in the Communications Act of 1934, the basic law under which electronic communications are governed in this country. Almost overnight, it seems, everyone wants to change the laws, rules and regulations.

In the U.S. House of Representatives, Congressman Lionel Van Deerlin of California has introduced H.R. 3333, known as the **re-write**, though officially labelled the Communications Act of 1979. In the Senate, two separate bills have been introduced to **amend** or **revise** the Communications Act of 1934. They are S. 611, introduced by Senator Hollings of South Carolina, and S. 622 introduced by Senator Goldwater of Arizona.

All of these bills are aimed at **deregulation**, or loosening the number and restrictiveness of the rules under which broadcast stations are operated. Two out of the three advocate elimination of the "public interest, convenience, and necessity" standard in favor of allowing **marketplace forces** to guide station

public service programming. In other words, they feel the forces of competition within each market will assure that the public is being served. Obviously, not all of us are in agreement with that.

Even the FCC itself seems to be hopping onto the deregulation bandwagon. FCC Chairman Charles Ferris seems to be motivating the movement in this direction, and the Commission itself may shortly issue proposals for public comment on eliminating minimum standards for news and public affairs programming, and for maximum number of commercials permissible on radio stations. And, there is also movement afoot to abolish requirements for radio stations over 10-watts to conduct ascertainment of community needs showings indicating local community needs and problems and programming they've aired to deal with these needs and problems.

The so-called Fairness Doctrine, which requires stations to present reasonable opportunity for opposing viewpoints on controversial issues of public importance may also have its days numbered in these deregulation, re-regulation, re-write, and revision activities.

Right now, it appears the direction these efforts are headed towards is clear. The questions are those of degree: how much loosening of the rules will there be, and how many markets? It seems a foregone conclusion that the larger markets have been decided upon as excellent prospects for almost complete radio deregulation. But, because marketplace forces are not as competitive, questions remain about smaller markets.

Not surprisingly, most commercial broadcasters are very much in favor of this new climate of deregulation. Spokesmen keep saying it will free them from a lot of unnecessary paperwork and that the actual amount

of news and public affairs programming in a market will not suffer. Others are not so sure about that. The main concern of the commercial broadcasters, particular TV stations, is over similar deregulation efforts aimed at cable TV which would lift restrictions on which stations and which programs could carry in any particular market. Licensed commercial broadcasters see that as a threat to them in the form of increased competition which in turn they translate into reduced revenues. They are also concerned about proposals for spectrum-use fees, which could also cut into profits.

College broadcasters, at least those who've given any thought to these matters, seem to fall into 2 groups, depending on which role they're assuming at any given moment. Some who operate and manage their own stations would look forwards towards a lessening of regulations since, for example, ascertainment is a long complicated process which takes a lot of work and whose practical effect at many stations may be little. If these people were to frankly state their feelings, news and public affairs programs are considered an intrusion on their music programming, they lose audience, they're usually uninteresting, and it's hard to get people to produce them. Their attitude seems much like the commercial broadcaster once the public relations facade is stripped away.

On the other hand, there are those whose knowledge of broadcasting and how it works coupled with their concern for preservation of some idealism leads them to strongly oppose these efforts towards deregulation.

They know, once requirements are lifted, stations will become even more lax in their news and public affairs programming, and many may make little or no effort to serve their community's needs, interests, and

problems. Even under present rules, many stations do an absolute minimum, and confine this programming to odd hours in the middle of the night, very early morning, or as with TV stations, Sunday morning and early afternoon. Minimal as the current requirements are at present, they provide some motivation for stations to produce and air at least minimal amounts of this public service programming. With the requirements completely lifted, that forced motivation will be gone, and there is skepticism that others would be fully motivated by the same moral and idealistic concerns.

I suppose your own attitude depends upon whether you are thinking about your own station, or about others. At your own station, even with deregulation, you'd still be able to provide programming that serves the public interest in dealing with its needs and problems. But, you may have a tougher time getting those programs on the air unless those making the programming decisions have a similar interest. No longer would the FCC requirements be a part of your justification for air-time.

Of course, the wider concern is for what would happen at other stations. Presumably, the motives of the commercial broadcasters would not necessarily lean towards presentation of news and public service programming out of a sense of moral obligation. Most stations would probably continue at their present level, however, to avoid criticism for any wholesale dumping of such programs. But gradually, a decline could be expected. In radio, with infrequent exceptions, news and public affairs programming have not traditionally attracted either large audiences or, more important to commercial stations, advertisers. If marketplace forces were to determine programming, a lowest common denominator approach might be what gains economic acceptance and thus success.

Coupled with these deregulation efforts to eliminate ascertainment and news/public affairs programming requirements for radio broadcasters, all 3 bills before Congress propose that radio station licenses be granted for an indefinite period, subject only to revocation. Even S. 611, which retains the public interest, convenience, and necessity standard, proposes a radio broadcast station

license which does not need periodic renewal.

Again, your opinion on this depends upon which hat you're wearing. At your own station, most would probably favor a station license that did not have to be renewed. After all... if you've ever had to compile all the data and information required for a renewal filing, you know the kind of incredible task it is.

On the other hand, without periodic renewal, and with elimination of the public interest and any programming standards by which a station's performance is to be judged, the quality of service provided by stations may tend to degenerate. After all, if no one's looking...

Certainly, the months ahead will be interesting ones for broadcasters... and particularly for noncommercial educational broadcasters who have other FCC changes and proposals with which to contend, as well as recent recommendations by the Carnegie Commission on the Future of Public Broadcasting.

Every station should get a copy of these bills, read them and send along

comments to the bill's sponsor (with an extra copy to IBS). We also expect that the FCC proposals will be forthcoming in the form of Notice of Proposed Rulemakings. These will offer a period of time in which comments are solicited, too. And, it gives stations another direct opportunity to tell the FCC how they feel.

Within these pages and/or through other IBS member-station publications, we'll be sending out further information on the the 3 bills now before Congress, and on the FCC proposals when they are finally published.

Not since 1934 have so many changes been proposed in the regulation of broadcast communications all at the same time. Last time around, those laws formed the basis for communications regulation for 45 years till now. What happens this year may prove to have similar staying power.

The future is now and it is up to each of us to understand and help shape it.

JT

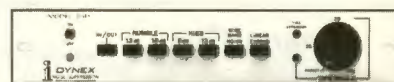
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IBS Comments:

proposed non-commercial educational FM table of assignments

Editor's Note: Docket 20735 before the FCC covers several different areas affecting noncommercial educational broadcasters. Rules on some of these proposals have already been adopted by the Commission, while others remain before it for further consideration. One aspect still pending involves a proposed Table of Assignments for the noncommercial educational FM band.

Though such a table involves highly complex technical considerations, the basic principles involved can be easily understood even by non-technically-minded student broadcasters.

At this time, the commercial AM and noncommercial FM bands work in somewhat similar fashion when it comes to new stations. An applicant hires an engineering consultant to conduct a frequency search for a vacant local frequency which will accommodate the proposed station at the proposed location, and with the proposed power, without causing or receiving interference from other stations on the same or adjacent frequencies. Aside from ascertainment of community needs, financial resources, and other considerations, if the identified frequency will accommodate the proposed station without interference, the application is generally accepted for filing. That's how the process works without a table of assignments.

The TV and commercial FM bands both utilize a Table of Assignments, however. In these bands, an applicant can only apply for a new station on a vacant frequency already assigned to his/her local community or one

nearby. If there is no vacant frequency already assigned, the applicant must determine if an unassigned vacant frequency would accommodate the proposed facility, then the applicant must apply to the FCC for a rulemaking to assign that frequency to that locality. Obviously, this extra step takes some time, and usually some monetary expenditure for legal and/or technical counsel. Should the FCC act favorably on this rulemaking, the frequency is then assigned to that community and, at that point, becomes open for anyone to file a construction permit application for its use. An applicant who petitioned for the rulemaking to have the frequency assigned to the community, is not guaranteed use of the frequency, but instead could face competitive hearings with others seeking use of the same frequency once it was assigned to that community.

A Table of Assignments thus tends to make it more difficult to establish a new station, particularly where the Table does not already contain a vacant frequency in your intended community.

Imposition of such a Table for the noncommercial educational FM band is one of the proposals under consideration in Docket 20735. The proposal under discussion is one largely promulgated by the Corporation for Public Broadcasting [CPB] as the result of a computerized program it financed. Its prime objective seems the expansion of available frequencies for high-powered CPB-funded stations.

For a number of reasons, IBS has

opposed imposition of such a Table. Our views were most recently communicated in the form of comments on the proposed table filed with the FCC.

Originally, the closing date for filing comments was January 2, 1979. Later, this was extended to April 2, 1979. Now, because of several requests for additional time in which to file comments, and an expected report on TV Channel 6 interference considerations to be released by July 15th, the Commission has extended the date for filing comments to October 15, 1979.

This extended date will give stations the opportunity to file their own comments on the proposal. If you don't have a copy of the proposed Table on hand, you can request one from: Educational Broadcasting Branch, Federal Communications Commission, 1919 M Street, NW, Washington, DC 20554. Ask for a copy of the proposed noncommercial educational FM Table of Assignments in the Further Notice of Proposed Rule Making, 43 F.R. 27682, under Docket 20735. Having your own copy on hand will enable you to better prepare your own comments, and probably aid in your understanding of the IBS comments already filed.

The following is a reprint of the actual comments filed by IBS in anticipation of the April 2 filing deadline, which was later extended. Much of the technical work and text draft were prepared by Ludwell Sibley of our Engineering staff. Our special thanks go to him for his extensive contribution of time and effort. —JT

INTRODUCTION

The Intercollegiate Broadcasting System, Inc. ("IBS"), is a nonprofit association of high-school and college broadcasters currently including about 400 educational FM ("EDFM") licensees. IBS has worked to advance college radio since 1941, participating in pertinent proceedings before the Commission.

In these comments we offer some analysis of the Table of Assignments for educational FM stations proposed

by the Corporation for Public Broadcasting ("CPB"). It should be noted at the very start that we think the "demand" system of EDFM allocations has worked well from the beginning and can be made to work better. Nevertheless, since the CPB is pressing for a Table, we are obliged to examine it closely.

We will use actual results from the portion of U.S. territory that uses a table of EDFM allocations to show that, in areas where demand for

channels is appreciable, the table and its underlying rules effectively stifle the expansion of EDFM service.

COMMENTS ON THE CPB-PROPOSED TABLE OF ASSIGNMENTS

General. We find that the proposed table misses the chance for a new start to correct the allocations problem in metropolitan areas. Commercial allocations in large cities usually provide a solid base of Class B or C assignments every fourth

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channel, for example,, channels 222, 226, 230, 234, 238 . . . in Los Angeles. It would be possible to gain at least some reduction in channel crowding in large cities if existing stations were moved in frequency according to a predetermined plan, typically at the expiration of existing licenses. Such a move has been done before, as when 782 AM stations were moved by as much as four channels in March, 1941. Unlike the case with directional AM stations, the cost to move an FM operation a few channels is negligible.

However, the proposed table simply codifies existing frequencies, with occasional increases in power or height. A reform of this sort, as we will show later, is worse than no reform at all.

The Channel-Six Problem. We will not discuss at length the steps necessary to reduce interference to Channel 6 television stations, thereby allowing new EDFM stations in Channel 6 areas. We have previously commented in this docket case that specific rules are necessary. We agree with the CPB that the problem is mostly one of cut-price receiver design. If the Commission has the power to regulate the overall-system aspects of receiver design (e.g. UHF noise figure), it presumably has the authority to impose minimum standards of adjacent-signal rejection as well.

We hope the Commission's forthcoming Report and Order on this matter will prove helpful to both EDFM broadcasters and Channel 6 viewers.

EDFM Channels Based on Television Assignments. Part 2 of the proposed table reserves 300 Class A and B assignments to small communities based on their already having educational TV (EDTV) assignments. This is simple speculation with the public spectrum of the loosest sort. It is inconceivable how existence of an EDTV reservation made, typically, in 1952 indicates that the same community needs an EDFM assignment, particularly when 72% (308 out of 425) of those EDTV assignments remain unused a quarter-century later.

One can defend assignments to small communities, in a halting way, because population by itself is a primitive index of public need for EDFM services. Presumably the EDTV assignments were based to some degree on population. But the populations of these small towns have shifted in the last 27 years: some have

lost people; some have gained; some have merged with others. Many new towns exist where there was no significant settlement a generation earlier. True, EDTV assignments have changed from time to time, to accommodate specific requests for new stations. But to base radio allocations on mostly-old, mostly-unused EDTV assignments is ludicrous.

Perhaps there is a line of reasoning that assumes that EDFM and EDTV will be more likely to grow if a single organization operates both media in a given town. But this flies in the face of current sentiment for greater diversity in media control.

A "Zone" Problem in the Proposed Table. We note a curious inconsistency with commercial FM allocation processes in the proposed table. Commercial stations of high power are designated either Class B or Class C, depending on whether they are located in Zone II. (In the continental United States, Zone II is basically all territory except 17 north-central and northeastern states and most of California). If population density in Zones I and I-A forces this fundamental distinction in commercial practice, it is strange that a similar division is not suggested for noncommercial assignments. The table suggests the following Class C assignments in Zone I-A: channels 207C1 and 215C2 in Fresno; channel 202C1 in Bakersfield. While these assignments may work technically, they preclude the establishment of a larger number of Class A and B stations. No explanation is offered for this odd allocation.

Relationship to Existing Facilities. An informal statistical analysis of the data in the proposed table raises some important questions. For example, as shown in Appendix A Table 1 of these comments, Parts One and Two of the proposal identified a total of 308 cities with activated channels. Of those cities, 150, or almost half, had one or more existing channels with facilities above the arbitrary Class assigned to that city in the proposed table. Part Three contained an additional 277 cities, but the table does not indicate any proposed class assignment for them.

The proposed table makes no mention of it, but one must assume that existing facilities would be grandfathered in at their current levels where those levels exceed the proposed class assignment for that

city. If this remains true, then almost half of the cities identified have stations that exceed the table's proposed class assignments. This does not speak well for the relationship of the proposed table to actual reality. If it is not true, then presumably those stations exceeding the proposed class assignment for that city would be forced to reduce their power, which is inconsistent with the thrust of this docket and contrary to precedent in most Commission proceedings.

The question of the smaller cities with no assigned class remains unanswered as well.

Accuracy of Proposed Table. In our Appendix A, Table 2, the summary of data from the proposed table indicates a total of 835 activated channels. Yet, the Commission's figures as of 9/30/78, (as quoted in **Broadcasting** 12/11/78), show a total of 973 on-air noncommercial educational FM stations, including those with licenses (938) and CP's on-air (35). This leaves some 138 on-air stations unaccounted for in the proposed table.

At first guess, one might suggest that the missing stations are all Class D stations. Parts One and Two show a total of 180 Class D1 existing stations. However, for some unknown reason, Part Three, which purports to list all the licensed stations in smaller communities, does not show a single Class D in existence in these markets. Even if one were to suppose the missing 138 stations were all Class D facilities left out of the Part Three listings, it would not coincide with the FCC data.

As of 9/30/78, the Commission showed a total of 973 noncommercial educational FM stations on the air, as previously mentioned. Commission sources have indicated that the number of Class D stations is about 50% of the total, or approximately 486. Yet, if one adds the 180 Class D facilities shown as existing in the proposed table, and additionally assumes all of the 138 "missing" stations are also Class D, their total comes to only 318, still a good distance away from the 486 estimated by the Commission.

The discrepancies between these figures and the "missing" 138 stations raises some understandable questions about the accuracy of the table. We are not equipped to analyze each and

(Continued on Page 13)

New rules call for new decisions.

The new FCC Rules for stations operating with less than 100 watts of power raise some interesting and important questions. For instance, should you increase power or change frequency? Could you do both? What's your position likely to be with respect to other stations also seeking to improve. How do you protect your present frequency or pick out the second best choice? What will a power increase or frequency change cost you in equipment, paperwork, and time? Where can you get the money? And if you decide to increase power, how do you handle the new FCC requirements for ascertaining community needs?

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computerized program logs: how to do it

by Dr. Robert Burr Cade and Dr. Ruth Ann Cade

Introduction.

The computer has become a valuable tool for educational broadcasters. Computers can be used to schedule programs and spot announcements, prepare logs, produce automated programming, control transmitter equipment, and prepare programming data for license renewal applications. Most educational stations have access to on-campus computer facilities. A previous article in the **Journal of College Radio** (February, 1977) described what is perhaps the most useful application of computer technology to broadcasting: the computerized program log. The purpose of this article is to provide a more detailed step-by-step "how to do it" guide for the station manager who wishes to have a computerized program log.

The procedures to be described were developed by the authors for two stations at the University of Southern Mississippi: WMSU-AM and WMSU-FM. WMSU-AM is an on-campus carrier-current commercial station. WMSU-FM is a ten-watt non-commercial education station. Since readers will be most interested in preparing computerized logs for educational stations, the sample log which accompanies this article is that of WMSU-FM.

There are many advantages to using a computerized log. It takes less time to prepare than does a typewritten log. Typographical errors — which have always been a problem with typewritten logs — are prevented. A computerized log costs less to prepare than does a typed log. Perhaps the greatest advantage of a computerized log is that data from the logs can be automatically stored in the computer's "memory" and retrieved when needed for license renewal or for research.

The creation of a computerized log is a three-step process: (1) content: determine what kinds of information should appear on the log; (2) log arrangement: determine how this information should be arranged on the pages of the log printout; and

(3) log preparation: prepare a computer program which will print each day's log as needed.

Log Content

The information which should appear on the log is of two kinds: [1] information required by the FCC and [2] optional information needed by the individual station for administrative, operational, or training purposes.

Required Information. FCC program log requirements are found in Volume III, Section 73 of the FCC Rules and Regulations. Volume III may be purchased from the Superintendent of Documents, Washington, D.C. 20401. It is currently priced at \$30. Program log requirements for non-commercial educational FM broadcast stations are included in sections 73.581 and 73.582. (See sections 73.281 and 73.282 for commercial FM stations; see sections 73.111 and 73.112 for AM stations.)

Excerpts from those portions of sections 73.581 and 73.582 which specify what should be included on program logs are as follows (information relating solely to operating and maintenance logs has been deleted). All of Section 73 should be reviewed and interpreted by each station manager before making final decisions regarding program log content.

73.581 General requirements relating to logs.

- (a) The licensee or permittee of each non-commercial educational FM station shall maintain program. . . logs. . . Each log shall be kept by the station employee or employees (or contract operator) competent to do so, having actual knowledge of the facts required, who. . . shall sign the appropriate log when starting duty and again when going off duty and setting forth the time of each.
- (b) The logs shall be kept in an orderly and legible manner, in suitable form, and in such detail that the data required for the particular class of station concerned is readily available. Key

letters or abbreviations may be used if proper meaning or explanation is contained elsewhere in the log. Each sheet shall be numbered and dated. Time entries shall be made in local time and indicated as advanced (e.g., EDT) or non-advanced time (e.g., EST)...

73.582 Program log.

- (a) A program log shall be kept in accordance with the provisions of 73.581 for each broadcast day, which, in this context means from the station's sign-on to its sign-off, or from midnight to midnight for stations operating 24 hours a day.
- (b) Entries: The following entries shall be made in the program log:
- (1) For each program.
- (i) An entry identifying the program by name or title.
- (ii) Entries which indicate the time each program begins and ends. If programs are broadcast during which separately identifiable program units of a different type or source are presented, and if the licensee wishes to count such units separately, the beginning and ending time for the longer program need to be entered only once for the entire program. The program units which the licensee wishes to count separately shall then be entered underneath the entry for a longer program, with the beginning and ending time of each such unit, and with the entry indented or otherwise distinguished so as to make it clear that the program unit referred to was broadcast within the longer program.
- (iii) An entry classifying each program as to source. . . (For network programs, also give name or initials of network, e.g. ABC, CBS, NBC, NPR, etc.)
- (iv) An entry classifying each program as to type. . .
- (v) An entry for each program presenting a political candidate showing the name and political affiliation of such candidates.

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- (d) Manually kept log. Entries on a manually kept log may be made either at the time of or prior to broadcast. The employee responsible for keeping the log

shall sign the log when starting duty and when going off duty and enter the time of each. If entries are preprinted prior to broadcast and any deviation therefrom occurs in what was actually broadcast, an appropriate correction must be made on the log. When the employee keeping the log signs the log upon going off duty, that person attests to the fact that the log, with any corrections or additions made before he or she signed off, is an accurate representation of what was actually broadcast.

It should be remembered the rules which appear above are **excerpts** only. The reader should thoroughly study all of Section 73 before making final decisions as to log content.

Optional Information. Station managers may wish to include additional information on program logs: program formats, lists of records to be played. The log which accompanies this article has several optional items. On page 1 of the log, the authors have found it useful to include the rule regarding log signatures. Another optional item appears on page 2: a statistical breakdown of the day's programming in terms of the amount of time devoted to each type and source of programming. A further optional item is the discrepancy report on the final page of the log.

The policy of the FCC regarding optional information on logs is permissive; stations may include any information (over and above FCC minimum requirements) which is found useful.

Log Arrangement.

The next step is to decide how the required and optional information should be arranged on each page of the log. Each page of computer printout paper is 131 spaces wide, and 60 spaces from top to bottom. The information may be arranged on the page in any way, so long as it is legible, neat and orderly, and can be easily read by the operator on duty.

The first page of the log (see illustration) should contain the call letters and frequency of the station, the day and date, a page number, a legend where abbreviations are explained, and blank spaces where the operator signs on and signs off. The first page of the WMSU-FM log has

some additional features which are not FCC requirements, but rather are used to improve station operation. As stated previously, we have found it useful to quote Section 73.582 on the first page, for obvious reasons. We also have a "Checklist" which aids in station operation. Finally, we have an "Announcements for Today's Operators" section.

The second page of the log contains the daily data summary. This

facilitates the preparation of FCC data at license renewal time, and aids in program planning and research.

Pages 3, 4, and 5 contain the day's programs and spots, arranged chronologically. Each of these pages has a "header" which includes the call letters, the day and date, and the page number. There are also column headings for the vertical columns, which are arranged on the page as follows:



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Col. 1-10	the beginning time of each log entry
Col. 12-21	the ending time of each log entry
Col. 25-55	the name of each program or spot
Col. 59-60	the length of each program
Col. 63-65	the type of each program
Col. 69-71	the source of each program
Col. 75-82	the length of each spot
Col. 83-84	the type of each spot
Col. 87-89	the source of each spot
Col. 93-103	a blank line for the operator to indicate the starting time of each log entry
Col 110-113	a blank line for the operator's initials

The last page, page 6, includes the discrepancy report and a place for the manager to explain whether and how each discrepancy has been corrected.

Log Preparation

Once log content and log arrangement have been determined, the final step is to prepare a computer program which will print each day's log as needed. If the station manager is unfamiliar with computer programming, he or she will need the assistance of a computer programmer. The computer programmer may approach the problem in any of several ways, but the basic procedure is the same. It involves, first, the creation of a "data file" and a "source program." The data file is simply a copy of the entire log, which is stored electronically in the computer's memory. The source program is a set of instructions which tells the computer to "read" the data file, arrange the information on the page, print the log, and store (in the computer's memory) all information which may be needed for later retrieval (for research or for license renewal).

A competent computer programmer, if given (1) the information to be

included on the log, and (2) how the information should appear on the page, can prepare a computer program which will generate each day's log.

Conclusion

While the preparation of a computer program to create program logs requires a substantial initial investment in time, the long-range benefits are many. First, each day's log can be updated, prepared and printed in 5 to 10 minutes. Very little training is required for the students who "batch" each day's log. The logs are free of typographical errors. Most broadcasters have learned that errors on logs generate errors on-the-air, and these just do not occur with a computerized program log. Smoother on-the-air operation, reduced cost, and increased student learning are among the benefits of computerized program logs.

more on solid state switching

by Jeff Close

This is the second of two articles on solid state switching. Last month we described a solid state switch controlled by ON and OFF pushbuttons. This article describes a more sophisticated switch and a flasher timing system where the ON and OFF times are separately adjustable.

This sophisticated switch is called a zero-crossing device. This device, also known as a zero-voltage switch (ZVS), "watches" the AC line sine wave and after being enabled, will trigger when the sine wave crosses the zero voltage mark. (See Figure 1). The zero crossing would be at points: a, i, b, j, c, and d. If, however, triggering were to occur randomly, as in a relay or the system shown in last month's article, it might trigger at points: e, g, k, f, h, or 1. When triggered on these points, the voltage on the load will go from zero to a large voltage in almost no time at all. The result will be a squared edge pulse, particularly at points g, k, or 1. This squared edge is similar to a square wave and is likely to contain harmonics all the way into the RF range. Besides the RFI, a glitch will appear on the AC line. Either of these types of electromagnetic interference

(EMI), could cause an audible click in an audio console.

This click may not be a problem if it does not happen often, but in the application of flashing on-air warning lights, for example, this feature is a must. Though there are other ZVSs on the market, the desirable features of the RCA CA3079 are: low cost, 14-pin DIP package, self-powering with a dropping resistor, and it will power a photo-transistor with an additional filter cap.

About the Circuit

Working roughly from left to right in Figure 2, the DC input voltage can be from 10 to 24 volts. Whenever the DC is supplied to the IC, the flasher will begin to function. The ground shown is power supply ground. The IC is the RCA 3094, which is an operational transconductance amplifier with an uncommitted Darlington pair for increased power output. The CA3094 features high input impedance, high gain, good linearity, and the ability to sink or source 100ma. These qualities make the CA3094 a good choice for an astable multivibrator, and it's inexpensive too.

The multivibrator's timing RC circuit

is controlled by diodes D1 and D2 and their associated variable resistors. When the IC turns on, current will flow in the LED because there is a transistor between pins 8 and 6 of the CA3094. R5 is current limiting for the LED and its value may have to be lowered if the DC operating voltage is below 15 volts. R3 is the feedback resistor and R4 provides bias for the IC. R1 and R2 provide biasing on the input so that the CA3094 can be operated from a single ended supply.

The opto-isolator is not critical and can be most any one commonly available. The point to note here is that the pinouts can vary and this must be watched. The second stage of the opto-coupler should be an NPN type photo-transistor. It is possible to bypass the opto-coupler, however. Should a failure occur on the AC side of the system, 117VAC may find its way back as far as the DC supply and anything else fed by that supply. Since opto-couplers are inexpensive, the use of them is highly recommended.

When the photo-transistor is turned on, it changes the R6-R7 voltage

(Continued on Page 16)

IBS Comments...

(continued from page 6)

every entry on an individual basis to check for accuracy and effect. But, the questions raised by this simple analysis of the totals casts serious doubts on the proposal as a whole.

Additional Burdens Imposed by a Table. While the Commission has recognized the virtues of diversity of ownership and provided incentives for minority ownership elsewhere in its rules and policies, adoption of a table of assignments tends to work in the opposite direction. For, whenever a group wishes to serve a community without an assigned channel, the formidable burdens of a rulemaking are added to the process, along with the considerable time, expense, and risks involved. This favors the larger, more well-funded groups and organizations at the expense of those with less monetary resources.

Predictability of Channel Assignments. Unlike commercial assignments, made simply on the basis of economics and population, future noncommercial educational FM channel needs are not as easy to predict. Experience has shown some of the larger facilities to be located in some of the more sparsely populated areas, utilizing their power to cover a larger geographic area rather than a concentrated population center. Population, economics, and certainly the existence of an EDTV allocation are not necessarily valid criteria in themselves to measure the predicted need for a future EDFM assignment. The fact that the proposed table differs so from existing facilities alone suggests questions about its accuracy at predicting future needs.

DISASTROUS EFFECT OF THE EXISTING TABLE OF ASSIGNMENTS

General. Perhaps we can learn from actual experience with the table of EDFM assignments that became effective with the U.S.-Mexican FM agreement of August, 1973. That table is apparently necessary, but purely due to the need to share the same spectrum between U.S. educational and Mexican commercial stations. (The latter are, to a large degree, effectively U.S. commercial operations because of programming to English-speaking audiences.)

Assignments Where Channel

Demand Is Low. Looking first at the three states other than California in the table, there are presently a total of 120 allocations. Of these, nine were active before the table was developed. Two more are in use or authorized five-plus years later. This rather sluggish demand for channels would hardly justify establishment of a table by

itself; only the residents of McNary, Arizona (pop. 600) need their EDFM assignment; if so, they haven't voted for it with a form 340. The effects of a table in areas lacking channel demand are thus of no great consequence.

Assignments Where Channel Demand Is High. Inspecting the situation in Southern California, all of

APPENDIX A

TABLE #1

	Cities With Activated Channels	Cities Where One or More Activated Channels Exceeds Table-Assigned Class
Part One	174	83 (48%)
Part Two	134	67 (50%)
Subtotal	308	150 (49%)
Part Three	277	(Not Indicated)
TOTAL	585	

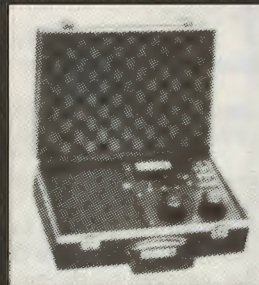
TABLE #2

	Total Number of Activated Channels	Number of Activated Channels Exceeding Table-Assigned Class	Number of Activated Class D Channels
Part One	380	106 (28%)	119 (31%)
Part Two	163	76 (47%)	61 (37%)
Subtotal	543	182 (34%)	180 (33%)
Part Three	292	(Not Indicated)	(Not Indicated)
TOTAL	835		

FCC Tabulations as of 9/30/78 (quoted in **Broadcasting** 12/11/78):

Licensed noncommercial educational FM: 938
CP's on-air: 35
TOTAL: 973

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the 14 original assignments simply reflecting existing stations. Of the three added since, two are in use; the petitioner for the third has apparently lost interest. The territory in question is mostly communities in the Los Angeles Standard Metropolitan Statistical Area.

The table has had a pernicious effect on the addition of new EDFM service in its area. Appended to this filing are case histories of 12 applications rejected by the Commission since 1975 on grounds of short-spacing. These were "hard" applications: the originators had gone through the whole procedure of getting funding, ascertaining community needs, making engineering studies, and finding transmitter sites. Most were new stations, to bring the first aural service to their communities of license. These dozen cases, of course, were just the ones that proceeded as far as an application. The staff of IBS, in dealing with member stations, has encountered others where staffs of carrier-current or cable FM stations are permanently discouraged from filing for EDFM facilities.

The sad thing about these dozen applications is that if they were a hundred miles farther north, out of the table-of-assignments area, most would have been granted. We do not claim that all 12 would have gotten on the air, but we know that the arbitrary criterion of mileage separations stopped them. (App. B)

In contrast to these unnecessary failures, there have been some successes: one new Class B, one new Class D, one D-to-A upgrade. Only one of these was a first aural service. But these three improvements could probably have coexisted with ten of the 12 rejected applications. A record of three successes out of 15 tries is dismal.

Practical operation of an EDFM table of assignments has thus suppressed the growth of service in the high-demand areas where a table is allegedly the most helpful.

TECHNICAL MEANS TO DEAL WITH TECHNICAL PROBLEMS

Making a Demand System Work.

IBS strongly recommends continuation of assignments based on demand. We look to electronic means of packing new and improved facilities into the available spectrum.

Use of Field-Strength Contours. The contour method of spacing stations is

APPENDIX B

EDFM APPLICATIONS IN SOUTHERN CALIFORNIA [TABLE OF ALLOCATIONS AREA] RETURNED FOR SHORT-SPACING 1976-1979

Location	Applicant	Facilities	First Aural Service	Tendered	Returned
Brandeis	Brandeis Camp Inst.	New Class D Ch. 212	Yes	2-27-76	9-24-76
Proposed site 29.5 miles from then-unapplied-for Ch. 212B assignment at Oxnard.					
Fontana	Fontana Unified School Dist.	New Class D Ch. 203	Yes	7-76	9-10-76
Proposed site 39.5 miles from KSBK, Ch. 203A, Mission Viejo; but with 3600-foot mountain range blocking the path. Also 17 miles from KSPC, Ch. 204A, Claremont; but acceptable on basis of 73.207(d).					
Hollywood	Calif. Public Comm. Assn.	New Class D Ch. unk.	Yes	1975	10-31-75
Returned on specific grounds of short-spacing.					
La Mirada	Quality Public Bcg. Corp.	New Class D Ch. 211	Yes	12-14-77	4-78
Proposed site 28.1 miles from KCRW, Ch. 210B, Santa Monica. Unacceptable on mileage basis, but met 73.507(d)					
LaVerne	La Verne College	New Class D Ch. 210	Yes	7-9-76	12-1-76
Application short-spaced to three operating co-or adjacent-channel stations. FCC accepted applicant's claims of meeting overlap limits (then Sec. 1.573, Note 1; now 73.507 (d),) but denied request to waive minimum spacings.					
Malibu	Pepperdine Univ.	New Class D Ch. 202	Yes	7-1-76	6-13-76
Application 17 miles from KCSN, Ch. 203A, Northridge. Unacceptable on mileage basis, but met 73.507(d). Mountain range, 1500 feet high and sparsely populated, between the two stations provided additional protection against interference.					
Norwalk	Cerritos Comm Coll. Dist.	New Class D Ch. 209	Yes	6-24-76	8-13-76
Application 33.9 miles from KLLU, Ch. 209A, Riverside. Unacceptable on mileage basis, but met 73.507(d). Mountain range, 1600 feet high and largely uninhabited, lies equidistant between the two stations and provided extra protection against interference.					
Paramount	Society of Separatists	New Class D Ch. 208	Yes	Unknown	12-21-77
Proposed site 17.5 miles from KPCS, Ch. 207B, operating with 3.8 kw at -510 ft. Application met 73.507(d) criteria, but mileage requirements assumed KPCS used 50kw at +500 ft. Site also 37.0 miles from KLLU, Ch. 209A, Riverside. Another short-spacing, but meeting 73.507(d). In both cases, hills provided additional shielding between pairs of stations.					
Pomona	Calif. State Polytech University	New Class D Ch. 201	No	5-17-76	6-15-76
Proposed site 26.7 miles from KLON, Ch. 201A, Long Beach. Proposed station would receive interference within its 1mV/m contour from KLON, but (A) FCC routinely allowed new Class D stations to receive similar interference, and (B) a 1200-foot hill mass blocked the interference path between the stations.					
Riverside	Univ. of California	Upgrade to Class A	No	Unknown	8-78
Applicant proposed use of directional antenna, thereby meeting 73.207(d). No significant preclusion of other services. Application was returned for short spacing.					
Thousand Oaks	Calif. Lutheran College	New Class D Ch. 212	No	6-29-76	10-8-76
Proposed site 27 miles from KCRW, Ch. 210B, Santa Monica. Limits of 73.507(d) were met easily in this case, even discounting the effect of a mountain range, 20 miles wide and reaching above 2000 feet, between the stations.					
Woodland Hills	Los Angeles Pierce College	New Class D Ch. 208	Yes	8-13-75	10-24-75
Proposed site 26.7 miles from KPCS, Ch. 207B, Pasadena. Criteria of 73.507(d) were met readily, even ignoring the effects of 1821-foot Cahuenga Peak which separates the two stations.					

highly efficient. Unlike a fixed mileage separation, it recognizes the barrier to interference that a hill mass provides. Assisted by rule waivers where justified, it recognizes the fact that much terrain is likely never to be populated: wildlife preserves and water are obvious examples.

We urge the Commission to assist this effort by finalizing the terrain-roughness correction now in the Rules but suspended: 73.333 Figure 5. Whether the present figure is used as-is or changed, a reliable terrain-roughness correction is an absolute need.

Use of Directional Antennas. A corollary of interference avoidance by contours is that efficient spectrum usage often comes from use of directional antennas. Such an antenna today runs perhaps \$9,000, due to the small number of suppliers and the extensive range testing required for one-of-a-kind designs. We think that this figure could be cut in half if the Commission established three or four standard directional patterns, and then set up a program of type-acceptance. The manufacturers would then have a standard product line for routine use.

Channel Changes by Existing Stations. Since the Communications Act grants no proprietary rights to a particular frequency, we urge the Commission to establish simple rules whereby an existing licensee can be caused to change channel by modification of its license. The

beneficiary of the move would have the burden of proving increased service, and of paying reasonable costs to the affected station. This would allow graceful transitions as demand for channels increased in a given area.

Protection of Actual Facilities, not Theoretical. In past years it was argued that facilities should be reserved to allow a given station to expand to some ultimate coverage area. This is the heart of the CPB's proposed table. However, the abolition of new Class D stations removes most of the opportunities for a stair-step approach. The shrinking enrollments and budgets at most educational institutions reinforce this harsh reality. New facilities in the future will be high-powered stations, budgeted up-front or not at all. Hence a demand system can be relied upon to allocate facilities efficiently.

Diffusion of Engineering Knowledge. By urging the use of engineering techniques to attack a technical problem, we are not asking for a "full-employment act for consulting engineers." IBS has provided how-to-do-it engineering procedures for its members for years. We have recently stepped up this program, and will offer much more in the months ahead. While a successful allocation study by contour techniques involves a good deal of work, the necessary skills are easy to teach. We want to see custom solutions applied to unique local problems; we do not want

to see engineering skills concentrated in the hand of a technical elite.

CONCLUSION

After studying the CPB-proposed table of assignments, we have found major flaws in it. Upon analyzing the effects of the existing table, we find that it has done more harm than good. We have outlined some ways in which the Commission can improve the existing demand-allocation systems, and urge that the present system be retained. We believe the flexibility of the present system far outweighs the theoretical advantages posed by a proposed table which, in itself seems questionable. Consistent with the stated policies of the Commission and the President towards de-regulation and seriously questioning imposition of new rules and additional burdens, it seems to us the objectives of adding new facilities and expanding existing ones can be accomplished far easier without the artificial restraints of a table of allocations in the non-commercial educational FM band.

Respectfully submitted,
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solid state... (continued from page 12)

divider, enabling the ZVS. The DC voltage for the divider is supplied by pin 2 of the ZVS. The ZVS has an internal rectifier and obtains power via the 5K ohm, 5 watt resistor R8. After the ZVS is enabled, it will trigger (pin

anne jones sworn in

Anne P. Jones, former General Counsel of the Federal Home Loan Bank Board, was sworn in recently as a member of the Federal Communications Commission.

The oath was administered by newly-appointed Federal District Court Judge David Nelson, a long time friend of hers, at Boston College's Gasson Hall.

Ms. Jones, was nominated by President Carter last January, and was confirmed by the Senate March 21. Her term will run until June 30, 1985.

Ms. Jones was with the Securities and Exchange Commission from April 1968 until she was named FHLBB General Counsel in January 1978. While at the SEC, she was an Attorney Adviser (April 1968 - April 1969) and Special Counsel (April 1969 - July 1970) in the Division of Corporate Regulation; Legal Assistant to Commissioner James J. Needham (July 1970 - July 1972); Associate Director (August 1972 - January 1976) and Director (January 1976 - January 1978) of the Division of Investment Management.

From July 1961 to April 1968, Ms. Jones was with the Boston law firm of Ropes & Gray practicing general corporate law.

A native of Arlington, Mas., Ms. Jones received her B.S. from Boston College, and her LL.B from Boston College Law School where she was a member of the Order of Coif. In 1978, she received the Boston College Alumni Association Award of Excellence in Public Service.

Ms. Jones is a member of the Federal Bar Association securities Law Committee and Savings Institutions Law Committee; a member of the American Bar Association Federal Regulation of Securities Committee; a member of the Massachusetts Bar Association and a member of the Board of trustees of Boston College.

She resides in Washington, D.C.

4) the next time the line voltage crosses zero. Pin 4, in turn, supplies the gate current for the triac. The triac's load should be resistive. Light inductive loads should be OK, but if not, a small resistance of about 500 ohms should be added between pin 4 and the gate of the triac. The load, however, should never be a transformer. This system is designed for load currents up to 5 amps with the power triac and heat sink. For loads greater than that, consult RCA's ICAN #6182.

One limitation on this circuit is that it requires access to both sides of the AC line and both sides of the load. It does not merely switch one side of the load as the circuit in last month's article did. Also, it's very important that the load may NOT be connected between Main Terminal 1 of the triac and the AC line; it must be connected as shown. The Main Terminals of the triac are not to be reversed either. Changing the electrical position of the load will cause the ZVS to be smoke-tested.

Applications

The in-studio application for this device which comes to mind immediately is that of an on-air warning light system. When triggered by keying the studio microphone, it can be used to flash an on-air light outside the studio door, and maybe even one inside the studio. The flashing light, particularly outside the door, will attract more attention than one that simply stays on steadily when the microphone is "live." You may come up with other useful applications, and if so, you might drop us a note and tell us about them. And, in fact, if you have some tech write-ups you'd like to

do on projects you've built, send them along as well.

Notes

Our thanks to RCA, since these circuits are adapted from their manuals. The CA3058 and CA3059 are pin-compatible with the CA3079. They can do more than the CA3079 and also cost more. The CA3094A and CA3094B are higher voltage models of the CA3094 and will work equally well in the circuit shown. Further information on these RCA devices will appear in the RCA Linear Integrated Circuits Manual and the following RCA ICANs: 6048, 6077, 6668, and 6182.

Parts List

All resistors are 10%, 1/2 watt, unless marked otherwise.

R1 — 47K ohms

R2 — 47K ohms

R3 — 100K ohms

R4 — 300K ohms

R5 — 510 ohms

R6 — 5K ohms

R7 — 10K ohms

R8 — 5000 ohms, 5 Watt

C1 — 100 ufd, 16 volt, electrolytic

C2 — .5 to 1.0 ufd

IC — CA3094, CA3094A, or CA3094B

ZVS — CA3079, CA3058, or CA3059

Triac — HEP R1725 or RCA T2802C or equivalent

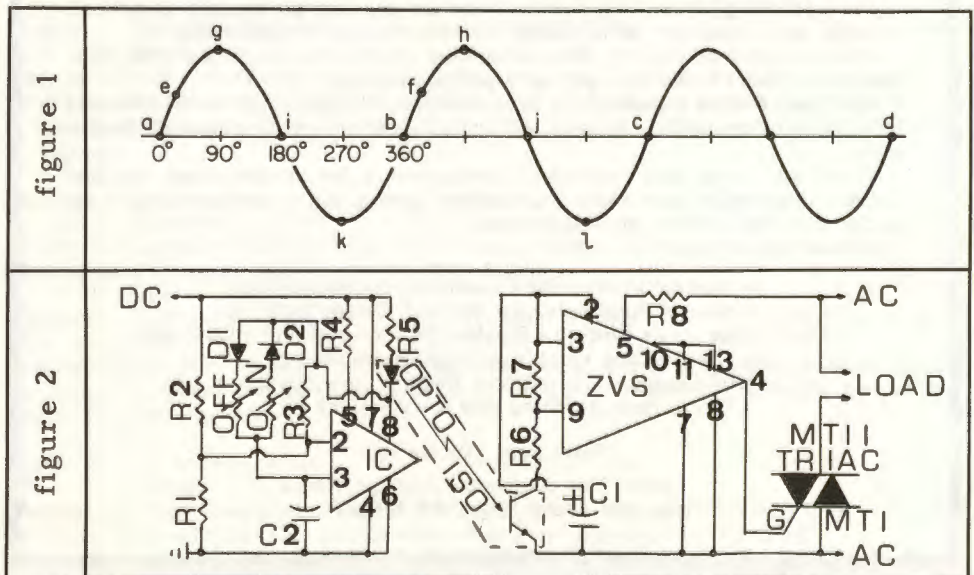
Opto — any with NPN photo-transistor

D1 — 1N914

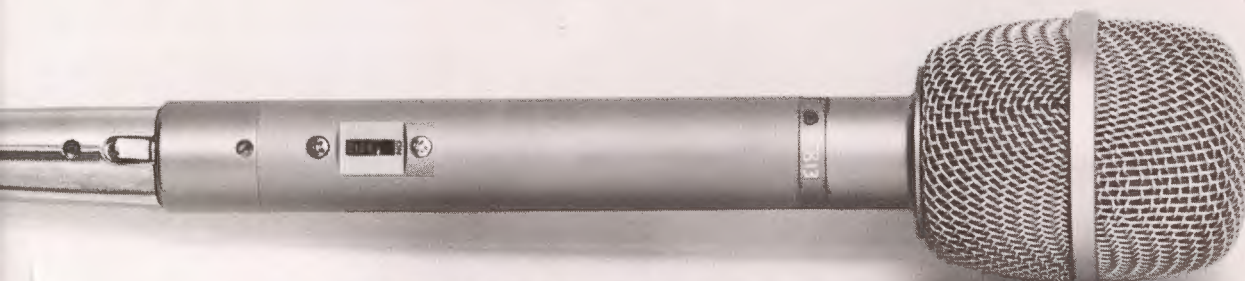
D2 — 1N914

Trimmers ON & OFF — both of these can be trim pots with resistance values around 100-500k.

Complete PC boards for the above are available from the author, J. Close, PO Box 1791, Boulder, CO 80306.



Audio-Technica introduces five new microphones... and a pleasant surprise.



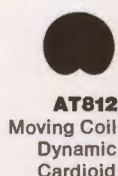
AT813
Electret
Condenser
Cardioid



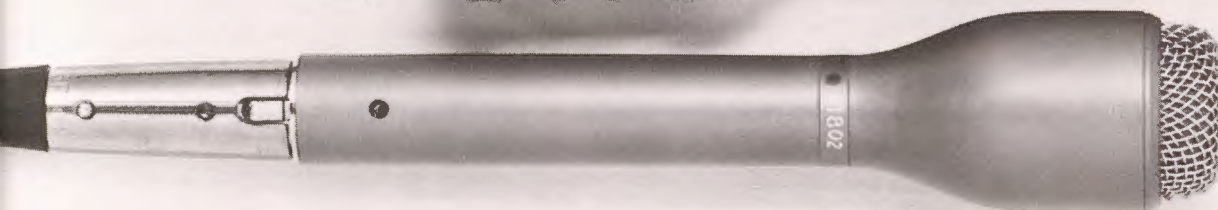
AT811
Electret
Condenser
Cardioid



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